

CLAIMS

1. Casting procedure, particularly for engine cylinder heads, characterized by a low-pressure casting, that is
5 an introduction of molten metal from a furnace into a die or mold positioned above it by exercising pressure on the surface of the molten metal inside the same furnace, combined with a gravity feeding of the same die or mold.
- 10 2. Casting procedure in accordance with claim 1, in which said gravity feeding takes place through open risers provided in the die or mold, the top of the latter being sealed, at least at the level of the risers, using lids which prevent the molten metal introduced
15 under pressure from overflowing.
3. Casting procedure in accordance with claim 1 or 2, in which the expulsion of the casting from the die or mold takes place below it.
4. Casting procedure in accordance with any of the
20 previous claims, in which at least the upper part of the figure of the casting is obtained using cores.
5. Casting procedure in accordance with any of the previous claims from 1 to 3, in which at least the upper part of the figure of the casting is obtained
25 using a metal cope.

6. Casting bench and mold assembly comprising:

means to expel the casting from the lower part of the mold, both for gravity and low-pressure casting procedures and for a procedure according to claims 1 to 5.

7. Assembly according to claim 6, in which every mold is equipped with a drag (35) and an ejectors plate (38) which extends downwards from the drag, and in which the bench has a plate holder (17) to be fastened to the ejectors plate and running vertically between an inactive lowered position and a raised casting expulsion position.

8. Assembly according to claim 7, comprising a cooled plate (16) on which the drag of the mold rests and which is fitted with an opening (16') for passage of the ejectors plate (38), said plate holder being movable underneath the cooled plate, towards and away from it.

9. Assembly according to claims 7 or 8, in which the ejectors plate (38) of the mold and the plate holder (17) of the bench can be fastened together using automatic quick lock systems.

10. Assembly according to claim 9, in which the mold ejectors plate has a pair of mushrooms (39) and in which the plate holder of the bench is provided with a slide (19) which runs along the plate holder and has

slots adapted to receive the mushrooms and to lock them in place following the movement of the slide controlled by a hydraulic cylinder (21).

11. Casting bench, especially for engine cylinders heads, destined to receive a mold with two sides, comprising two slides carriers (1) which are fixed to the corresponding slide of the mold and slide along guide columns (5) and sliding gibs (20) fitted to the bench for the movement of the slides by hydraulic cylinders (4).

12. Casting bench according to claim 11, in which the slides are fastened to the slides carriers by automatic quick locking devices.

13. Casting bench according to claim 12, in which every slides carriers has a slide (24) with slots to receive a pair of mushrooms which protrude from the slide of the mold and lock them in place following the movement of the slide controlled by a hydraulic cylinder (25).

14. Casting bench according to claim 11, 12 or 13, in which the slides carriers (1) are hinged to the sides of the bench, making it possible to rotate then upwards by means of oscillating hydraulic cylinders (7) fitted to the bench to enable easy cleaning and repainting of the figure parts of the slides of the molds.

15. Casting bench according to any of the claims from 11 to 14, in which at least one slide of the mold is made in at least two overlapping parts and in which the related slide carrier is made up of at least two corresponding parts, each of which is moved by a hydraulic cylinder (4), said hydraulic cylinder being controllable independently or in parallel.
16. Casting bench, especially for engine cylinders heads, with a tilting arm (8) hinged to the top, destined for the movement of a metal cope, a metal male for low-pressure casting, and/or seals for the upper part of a mold positioned on the bench, depending on the casting process used.
17. Casting bench according to claim 16, in which the cope, the metal male and/or the seals of the upper part of the mold are attached to a hydraulic cylinder (10) carried by the tilting arm for their vertical movement.
18. Casting bench according to claim 16 or 17, in which, during the casting process, the tilting arm is closed on the bench and locked to the latter from the opposite side compared with the hinged side by a locking device, such as a jack (28').
19. Casting bench according to any of the claims from 6 to 18, including a base plate (29) onto which the functional elements of the bench are mounted, and a

supporting structure (31) for the plate resting on the ground or on a turntable.

20. Casting bench according to claim 19, in which the base plate supporting structure is equipped with coupling
5 means for attachment to a lower structure (30) to raise it up from the ground to enable the positioning of a holding or maintenance furnace under said base plate.

21. Mold for obtaining castings, especially engine cylinders heads, comprising a drag (35) and an upper
10 part of a figure obtained through cores or a metal cope, characterized by the fact that said drag is intended to receive molten metal from a holding or maintenance furnace under the mold and by the fact that in said cores or in said cope risers are provided for a
15 gravity feeding of the mold.

22. Mold according to claim 21, in which inlets (36) are created in the drag for coupling it to pipes from the furnace containing the molten metal.

23. Mold according to claim 21 or 22, in which the upper
20 part of the figure is obtained by cores, comprising a plate (45) destined to be pressed, during the casting phase, onto the upper surface of the mold to prevent the molten metal from overflowing through the risers.

24. Mold according to claim 21 or 22, in which the upper
25 part of the figure is obtained by the metal cope (51)

and in which the cope is fastened to a plate (45') destined to be pressed, during the casting phase, onto the upper surface of the mold to prevent the molten metal from overflowing through the risers.

5 25. Mold according to any of the claims from 22 to 24, in which the plate is crossed by channels for the vacuuming of fumes and gases from the mold and is fastened to a support (46) in which there is a vacuum chamber (46") communicating with an external vacuum
10 device, said plate's vacuum channels being provided with filters to prevent the passage of molten metal.

26. Mold for obtaining castings, especially engine cylinders heads, using a low-pressure casting procedure, where the upper part of the figure is
15 defined by a metal male (52), characterized by the fact that said metal male is crossed by channels (52') for the vacuuming of fumes and gases from the mold and is fastened to a support (46) in which there is a vacuum chamber (46") communicating with an external vacuum
20 device, said metal male's vacuum channels being provided with filters to prevent the passage of molten metal.

27. Mold according to any of the claims from 23 to 26, in which only the plate or the support with the vacuum
25 chamber are jointed to the hydraulic cylinder (10)

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carried by the tilting arm (8) on the casting bench
according to any of the claims from 16-18.

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